

METALLI

Safety Data Sheet

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Date Issued: 20/6/2017

MSDS No: FLS-1634-XXX

1: Identification of the substance/mixture and of the company/undertaking

1.1 Product name **FLS-1634-XXX**

1.2 Description and application of the substance/preparation:

This MSDS is applicable to all pastes with product codes conforming to the following system:

First segment (binder) – Second segment (alloy) – third segment (%metal code) See **example** below:

ABC-9999-XXX

(1) –(2) – (3)



(1) The first segment (the binder code) consists of three letters or a number and two letters.

(2) The middle segment (the alloy code) may appear in basic form (no suffix letter), or with of several suffix.

(3) The last segment (3 characters: first 2 digits % metal of the paste, with last character being A,B,C,D,E,F,G,H,K,S, of T).

Product category:

Product type: A braze paste consisting of powdered filler metal and flux suspended in a binder and used for joining metals by heating the part to be joined and this product to or above the melting temperature of the filler metal.

This MSDS applies to products containing 60% metal or greater.

1.3 Details of the supplier of the safety data sheet

Company name	Metalli A/S Nyholms Allé 46 2610 Rødovre Denmark
E-mail	info@metalli.dk
Telephone number	+45 3670 0544

2. Hazards Identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 (CLP)

Health	Skin sensitization, Category 1 Carcinogenicity, Category 2 Target Organ Toxicity (Repeated exposure), Category 1
Environmental	Chronic hazards to the Aquatic Environment, Category 3

2.2 Label elements

Classification according to Regulation (EC) No 1272/2008 (CLP)

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Signal Word: DANGER

H317: May cause an allergic skin reaction
H351: Suspected of causing cancer.
H372: Contaminated work clothing should not be allowed out of the workplace.
H412: Harmful to aquatic life with long lasting effects.

P201: Obtain special instructions before use.
P202: Do not handle until all safety precautions have been read and understood.
P260: Do not breathe fumes or vapors.
P264: Wash exposed skin thoroughly after handling.
P270: Do not eat, drink or smoke when using this product.
P271: use only outdoors or in a well-ventilate
P272: Contaminated work clothing should not be allowed out of the workplace.
P273: Avoid release to the environment.
P280: Wear protective gloves, clothing, eye protection and face protection.

Response

P308+P313: If exposed or concerned: Get medical attention.
P302+P352: IF ON SKIN: Wash with plenty of soap and water.
P362+P364: Take off contaminated clothing and wash it before reuse.

Storage

P405: Store locked up.

Disposal

P501: Dispose of container in accordance with local, regional and national regulations.

2.3 Other hazards

Immediate concerns

Warning! This product contains:

Nickel: May cause skin irritation, dermatitis or sensitisation. Prolonged or repeated inhalation may be harmful. May form flammable dust-air mixtures. Under special conditions nickel can react with carbon monoxide in a reducing atmosphere to form nickel carbonyl, Ni (CO)₄, an extremely toxic gas.

Fumes from the soldering/brazing process are irritating to the eyes and respiratory system. Hot metal can cause eye and skin burns. Avoid breathing fumes from the soldering/brazing process. Use only with adequate ventilation.

3. COMPOSITION / INFORMATION ON HAZARDOUS INGREDIENTS

3.1 Substances Not Applicable

3.2 Mixtures



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Chemical name	CAS	Einecs	CLP-Classification	Wt. %
C141	-	-	Asp. Ha., Cat.1: H304	-
C095	-	-	Aquatic acute, Cat. 4 H413	-
Nickel	7440-02-0	231-111-4	  Skin sens.Cat.1; Carc. Cat. 2 STOT RE, Cat.1, Aquatic chronic, Cat, cat.3: H317; H351-1, H372-1, H412	40-70
Phosphorus	7423-14-0	231-768-7	Flam. Sol. Cat. 1; Aquatic chronic, Cat.3; H228; H412	5-10
Copper	7440-50-8	231-159-6	Acute Tox. (O), Cat.4 Aquatic acute, cat. 1; Aquatic chronic, Cat.2 H302: H410	5-12
Chromium	7440-47-3	231-157-5	Not Classified	5-10

The specific chemical identity of the flux/binder formulation ingredients are being withheld as a trade secret. Disclosure will be provided to medical personal in the event of an emergency. See section 8 for exposure limits of hazardous ingredients (where applicable). *** See Paste Spec Sheet for nominal alloy percentages.
(Full text of H-statements can be found under heading 16)

4. FIRST AID MEASURES

4.1 Description of first aid measures

Following eye contact remove contact lenses. Hold eyelids apart. Immediately flush eyes with plenty of low-pressure water for at least 15 minutes. Get medical attention if irritation persists.

Following skin contact Immediately, remove contaminated clothing. Do not attempt to remove any material bonded to the skin. Flush area of skin contact immediately with large amounts of water for at least 15 minutes. If irritation persists after flushing, get medical attention promptly. Launder contaminated clothing before reuse.

Following ingestion: If swallowed: Do not induce vomiting unless instructed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Following inhalation, remove victim to fresh air. If not breathing, trained personnel may give artificial respiration. If breathing is difficult, give oxygen by trained personnel. Seek medical attention.

4.2 Most important symptoms and effects, both acute and delayed

Eyes: Immediately flush eyes with plenty of low-pressure water for at least 15 minutes. Get medical attention if Irritation persists.

Skin: Immediately remove contaminated clothing. Do not attempt to remove any material bonded to the skin. Flush area of skin contact immediately with large amounts of water for at least 15 minutes. If irritation persists after flushing, get medical attention promptly. Launder contaminated clothing before reuse.

Ingestion: If swallowed: this product may cause gastrointestinal discomfort, nausea, vomiting.

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Inhalation: Inhalation of powder, dust or fumes may be irritating to the respiratory system. Hypersensitivity to nickel is common and can cause pulmonary asthma, conjunctivitis from inflammatory relations. Repeated over-exposure via inhalation of fumes evolved from heating of this product can have adverse effects on the pulmonary system (edema and/or emphysema).
Inhalation of nickel dust or fumes may cause cancer: See section 11

4.3 Indication of any immediate attention and special treatment needed

Notes to physician: No specific instructions known.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media: For fires involving this product, use dry chemical, carbon dioxide, foam, water spray. Do not use water if metal is molten.

Flammable class: Non-flammable solid.

5.2 Special hazards arising from the substance or mixture

General hazard: During the soldering/brazing process, hazardous decomposition products may be released: See section 10.

Explosion hazard: This material is classed as a non-flammable solid. Product will burn under fire conditions.

5.3 Advice for firefighters

Firefighting procedures: Move container from the fire area if it can be done without risk. Avoid inhalation of vapours or mists.

Firefighting equipment: Exposure to decomposition products may be a hazard to health. Do not breathe smoke, gases or vapours generated. Wear goggles if eye not protection provided. Wash away any material that comes into contact with the body, clothing or equipment. When fighting fires involving this product, wear full protective gear. For fires in enclosed areas, fire fighters must use Self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

General procedures: Waste disposal method: Scoop up excess material and wash affected areas with soap and water. Avoid contact with skin and eyes. Collect material into sealed and labelled containers for disposal. Clean contaminated surface thoroughly. Dispose in accordance with federal, state and local regulations.

Special protective equipment:

Avoid inhaling vapour and/or mists. Do not get spilled material on skin, clothing, or in eyes. Wear full protective clothing. See Section 8. Remove all contaminated clothing.

6.2 Environmental precautions

Water spill Avoid contamination of water bodies during clean up and disposal. Do not flush to sewer. Advise relevant authorities if material enters sewers, water sources or low-lying areas.

Land spill No data available

Air spill No data available

6.3 Methods and material for containment and cleaning up

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Large spill Recover spilled material. Reclaim this material whenever possible. Collect material into sealed and labelled containers for reclamation or disposal.

6.4 Reference to other sections

See section 8 for Personal Protective equipment
See Section 13 for product Disposal considerations

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Handling: Keep away from sources of ignition.

Storage: Keep lid tightly closed except when removing product.

7.2 Conditions for safe storage, including any incompatibilities

Storage temperature temperatures of 5-25° Celsius (41-77° Fahrenheit) to maximise shelf life of product.

Specific and use: Solder or Braze paste for joining metals.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters Phosphorus is in the form of nickel-phosphorus alloy. There is no specific data on health dangers or toxicity of this alloy.

CAS	Chemical Name		UK WEL
--C141		LTEL (TWA)	525 mg/m ³ (Supplier OEL)
7440-02-0	Nickel	LTEL (TWA)	0.5 mg/m ³
7723-14-0	Phosphorus	LTEL (TWA)	0.1 mg/m ³ (for Yellow-form Phosphorus (brazing fume By-product: diphosphorus pentoxide has STEL of 2 Mg/m ³)
		STEL	0.2 mg/m ³ (for Yellow-form Phosphorus (brazing fume By-product: Diphosphorus Pentoxide has STEL of 2 Mg/m ³)
7440-50-8	Copper	LTEL (TWA)	0.2mg/m ³ (fume as Cu) Respirable Dust - 1mg/m ³ (dusts & mists, as Cu)
		STEL	2 mg/m ³ (dust & mists, as Cu)
7440-47-3	Chromium	LTEL (TWA)	0.5 mg/m ³

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8.2 Exposure control

Engineering controls:

The use of local ventilation is required to maintain the concentration of fumes evolved from the soldering/brazing process to well below the occupational exposure limits, within the operator's breathing zone and the general vicinity. Use of process enclosures, exhaust systems, and other engineering/administrative controls should be designed in accordance with local conditions. Please refer to ACGIH document, Industrial Ventilation, A Manual of Recommended Practices (most recent edition), for details.

Eye/face protection:

Wear safety glasses with side shields as a minimum protection. Consult ANSI Z87.1 for more information.

Skin protection:

Wear chemical resistant gloves. When material is heated, wear thermal-insulated gloves to protect against burns.

Respiratory protection:

When exposure limits (listed above) are exceeded or ventilation is inadequate, wear a NIOSH or European Standard approved respirator, in accordance with OSHA respirator regulations (29 CFR 1910.134) or European Standards (EN 149). Consult ANSI Z88.2 *American National Standard for Respiratory Protection* for guidance on proper selection, use and care of respirators.

Protective clothing:

Avoid skin contact. Wear chemical resistant clothing (long-sleeved shirt buttoned at the wrist) as necessary to prevent contact. For Soldering/brazing operations where hot metal parts are handled and molten metal may be present, wear heat-resistant gloves and clothing to protect from burns.

Work hygienic practices:

Minimize exposure in accordance with good hygiene practise. Good general hygienic practices include: Eating, drinking and smoking should not be permitted in work areas. Wash thoroughly after handling, and before eating, drinking, using tobacco, applying cosmetics, or using the toilet. Keep area clean. Remove contaminated clothing promptly. Launder contaminated clothing before reuse. Avoid contact with eyes, skin, and clothing. Avoid breathing dust, vapour or mist.

Other precautions:

Educate and train employees in the safe use and handling of this product.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Flashpoint and method:

Not applicable

Appearance

Viscous paste.

Odour

Characteristic odour

Color

Gary

pH

Not Applicable

Vapour pressure

0.032 mm HG at 68° F/20°C (for C141)

Vapour density

>1.00 (air=1) (for C141)

Boiling point:

376-412°F (192-211°C (for C141)

Melting Point

alloy >538°C (1000°F)

Solubility in water

Partially Soluble

Evaporation rate:

No data available

Specific gravity:

>2.000 (water=1)

Auto-ignition temperature

Not Determined

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10. STABILITY AND REACTIVITY

- 10.1 Reactivity:** This material is not expected to be reactive at ambient conditions.
- 10.2 Chemical stability:** Stable under normal conditions of use.
- 10.3 Polymerization:** Will not occur
- 10.4 Conditions to avoid:** Avoid contact with incompatible materials. Avoid extreme heat. Avoid prolonged exposure to air and moisture.
- 10.5 Incompatible materials:** Materials to avoid: strong oxidizers, acids, halogens, ammonia, sulfur, alkalies, ammonium nitrate, hydrogen peroxide, lithium, nitric oxide, potassium chlorate, sulfur dioxide, nitrogen oxide, acetylene, nitric acid, sulphuric acid, bromates, strong bases, magnesium, chlorates, iodates.
- 10.6 Hazardous decomposition products:** Decomposition product may include, but are not limited to: Carbon oxides (CO, CO₂), fumes, smoke, hydrocarbons. Metallic decomposition products may include: Nickel/nickel oxide, chromium/chromium oxide, white phosphorous, phosphorus oxides, phosphine, phosphoric acid (if water is present), copper fume.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute

Chemical Name	ORAL LD ₅₀ (rat)	DERMAL LD ₅₀ (rabbit)	INHALATION LC ₅₀ (rat)
C141	>5000 mg/kg (rat)	2000 to 4000 mg/kg (rabbit)	4,3 mg/L/4 hr. (rat)
C095	>2000 mg/kg (rat)	Non-irritant (rabbit)	Not established
Nickel	>9000 mg/kg (rat)	Not established	Not established
Copper	152 mg/kg (rat)	Not established	Not established

- Eyes** **Binder:** Eye contact may cause: irritation, stinging, watering, redness, swelling.
Alloy: Can cause irritation and abrasion.
- Skin** **Binder:** Skin contact may cause: irritation, dermatitis.
Alloy: Hot molten metal may cause burns to the skin. Wear protective equipment when working with molten metal.
Nickel: Metallic nickel can cause nickel sensitivity resulting in an allergic reaction such as a skin rash.
Copper: Skin contact may cause irritation and dermatitis
- Skin absorption** This material contains one or more components which may cause adverse effects if absorbed through the skin.
- Ingestion** **Binder:** Ingestion may cause: gastrointestinal discomfort, irritation to the mouth, throat and stomach, nausea, vomiting, diarrhea.
Nickel: Ingestion may cause nausea, vomiting, dizziness, gastrointestinal Discomfort, headache.
Phosphorus: Red phosphorus is not readily absorbed and in pure form is considered non-poisonous. However, possible contamination with the yellow form must be considered, and symptoms such as nausea, vomiting, abdominal pain or garlic odour on breath will indicate poisoning by the latter. The estimated lethal human dose for white phosphorus is 50-100 mg.
Copper: Ingestion may cause nausea, vomiting, diarrhea.

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Inhalation

Binder: If inhaled, may cause: irritation of the respiratory tract, central nervous system depression, nausea, headache, dizziness, fatigue, drowsiness, unconsciousness, irregular heartbeat.

Nickel: If inhaled, may cause headache, coughing, dizziness, and difficulty breathing.

Phosphorus: Diphosphorus pentoxide (p₂O₅) fume is corrosive and irritating to the mucous membranes, respiratory system, eyes and skin. If inhaled, may cause coughing, bronchitis, possible kidney damage if contaminated with yellow phosphorus.

Copper: If inhaled, may cause: sneezing, nausea, weakness, fever, fumes from heating may cause metal fume fever.

Notes

If excessive quantities of zinc oxide fume are inhaled, it can result in the condition called metal fume fever. The symptoms of metal fume fever will occur within 3 to 10 hours, and include immediate dryness and irritation of the throat, tightness of the chest, and coughing which may later be followed by flu-like symptoms of fever, malaise, perspiration, frontal headache, muscle cramps, low back pain, occasionally blurred vision, nausea, and vomiting, There are no recognized complications, after effects, or chronic effect that from this condition.

Carcinogenicity

Chemical Name	NTP Status	IARC Status	OSHA Status	Other	General Toxicity
Nickel	NTP: Reasonably anticipated to be a human carcinogen.	Metallic nickel: IARC Group 2B listed - "possible human carcinogen" Nickel compounds: IARC Group 1 listed - "proven human carcinogen"	NIOSH listed as a "possible occupational carcinogen" OSHA listed as a "select carcinogen" U.S. EPA Group A- "human carcinogen"	ACGIH: Group A% - "not suspected to be a human carcinogen"	EU Carc.Cat. 3: Substances which cause concern for man owing to possible carcinogenic effects, insufficient evidendence for Cat. 2
Chromium		IARC Group 3 listed		ACGIH: A4 - "not classified as a human carcinogen"	

Sensitisation:

Metallic nickel can cause nickel sensitivity resulting in an allergic such as a skin rash.

Mutagenicity

This material was not made with components identified as being mutagenic.

Reproductive effects

This material was not made with components identified as reproductive toxin.

Target organs:

Affected target organs: respiratory system, GI tract, kidneys, liver, skin, lungs, eyes mucous membranes, central nervous system.

12. ECOLOGICAL INFORMATION

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12.1	Toxicity	Material – Expected to be toxic to aquatic organisms Material - May cause long-term adverse effects in the aquatic environment.
	Aquatic toxicity (acute)	No data available
12.2	Persistence and degradability	No data available
12.3	Bioaccumulative potential	No data available
12.4	Mobility in soil	No data available
12.5	Results of PBT and vPvB assessment	No data available
12.6	Other adverse effects	No data available

DISTRIBUTION: ecological information on this product and its ingredients is not known.

13. DISPOSAL CONSIDERATIONS

13.1	Disposal method:	Dispose of in according with EC, national and local regulations, or sell to refiner.
13.2	Product disposal:	Disposal of waste material from the use of this product may be subject to federal, state and local regulations. Waste characterizations and compliance with applicable laws are the sole responsibility of the waste generator. Reclaimed scrap metal has monetary value. Contact a commercial reclaimer for information on recycling scrap metals. All recovered material should be packaged, labeled, transported and disposed or reclaimed in conformance with applicable laws and regulations and in conformance with good engineering practices.
13.3	Empty container:	Do not reuse empty containers. Dispose of empty container in accordance with EC, national and local regulations.

14. TRANSPORT INFORMATION

Land transport ADR/RID (cross-border)

ADR/RID Class		
14.1	UN number	NA
14.2	UN proper shipping name	Not applicable
14.3	Transport hazard class (es)	Not applicable
14.4	Packing group	NA
14.5	Environmental hazards	
	Marine pollutant	Copper metal powder
	Tunnel restriction code	-
	Labels required	-
14.6	Special precautions for user	-
14.7	Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code	
	Transport in bulk	No further instructions, see above.
	Additional information	This product is classified as a hazardous substance per US DOT. When transported to, from or within the United States, it should be shipped under following if the RQ (100lbs) is exceeded: Proper shipping name: Environmentally Hazardous Substances, solid, n.o.s. (Nickel powder) Hazard Class: 9 UN number: 3077 Packing Group: III
This material is not classified as environmentally hazardous for transport per ADR/RID, ICAO/IATA, and IMO/IMDG		

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for transport per US DOT, ADR/RID, ICAO/IATA

and IMO/IMDG.

Maritime transport IMDG

14.1	UN number	NA
14.2	UN proper shipping name	Not applicable
14.3	Transport hazard class (es)	Not applicable
14.4	Packing group	NA
14.5	Environmental hazards	
	Marine pollutant	Copper metal powder
	Tunnel restriction code	-
	Labels required	-
14.6	Special precautions for user	-
14.7	Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code	
	Transport in bulk	No further instructions, see above.
	Additional information	This product is classified as a hazardous substance per US DOT. When transported to, from or within the United States, it should be shipped under following if the RQ (100lbs) is exceeded: Proper shipping name: Environmentally Hazardous Substances, solid, n.o.s. (Nickel powder) Hazard Class: 9 UN number: 3077 Packing Group: III

This material is not classified as environmentally hazardous for transport per ADR/RID, ICAO/IATA, and IMO/IMDG

Air transport ICAO-TI and IATA-DGR

14.1	UN number	NA
14.2	UN proper shipping name	Not applicable
14.3	Transport hazard class (es)	Not applicable
14.4	Packing group	NA
14.5	Environmental hazards	
	Marine pollutant	Copper metal powder
	Tunnel restriction code	-
	Labels required	-
14.6	Special precautions for user	-
14.7	Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code	
	Transport in bulk	No further instructions, see above.
	Additional information	This product is classified as a hazardous substance per US DOT. When transported to, from or within the United States, it should be shipped under following if the RQ (100lbs) is exceeded: Proper shipping name: Environmentally Hazardous Substances, solid, n.o.s. (Nickel powder) Hazard Class: 9 UN number: 3077 Packing Group: III

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15. REGULATORY INFORMATION

15.1 Regulations / legislation specific for the substance or mixture reach the Safety, Health and Environment.

RoHS	This product was not made with any components regulated under the RoHS Directive 2011/65/EU
European Union	This safety datasheet complies with the requirements of regulations (EC) No. 1907/2006 and 1272/2008. Nickel: Annex XVII of regulation (EC) 1907/2006 places restrictions on the use of articles containing this material.

15.2 Chemical Safety: Chemical Safety Assessment has not been carried out.

16. OTHER INFORMATION

RELEVANT H-PHRASES (for Hazardous Ingredients):

Acute Tox. (O), Cat. 4: Acute Toxicity (Oral), category 4
Aquatic acute, Cat. 1: Acute Hazards to the Aquatic Environment, Category 1
Aquatic acute, Cat. 4: Acute Hazards to the Aquatic Environment, Category 4
Aquatic Chronic, Cat. 2: Chronic Hazards to the Aquatic Environment, Category 2
Aquatic Chronic, Cat. 3: Chronic Hazards to the Aquatic Environment, Category 3
Asp.Haz., Cat.1: Aspiration Hazard, Category 1
Carc, Cat. 2: Carcinogenicity, Category 2
Flam. Sol., Cat.1: Flammable Solids, Category 1
STOT RE, Cat. 1: Target organ Toxicity (Repeated exposure), Category 1
Skin sens. Cat. 1: Skin Sensitization, Category 1

H228: Flammable solid
H302: Harmful if swallowed
H304: May be fatal if swallowed and enters airways.
H317: May cause an allergic skin reaction.
H351-1: Suspected of causing cancer.
H372-1: Causes damage to organs through prolonged or repeated exposure.
H410: Very toxic to aquatic life with long lasting effects.
H412: Harmful to aquatic life with long lasting effects.
H413: May cause long lasting harmful effects to aquatic life.

Education: A prerequisite is to have a thorough knowledge of this safety.